U. S. Department of Energy

Thomas Jefferson National Accelerator Facility

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Project Control System Procedures

Project Control System Procedure PCS-01 Schedule Planning

PCS-01 Schedule Planning Procedure

CONTENTS

Procedure PCS-01
Schedule Planning Procedure

1.0 General

This document defines the procedures and responsibilities for developing a project baseline schedule. In cooperation with the customer, all levels of project management are involved in the process of establishing a timetable of milestones and activities that will lead to a successful project outcome.

2.0 Procedures

The following Schedule Planning procedures are graphically displayed in Diagram 3.1.

1 - The Project Customer and the Project Director jointly determine the Baseline Milestones.

The Project Director, collaborating with the Project Customer, jointly select the project key events and decision points that constitute the master schedule. Titles, definitions and planned dates are determined for each Baseline Milestone.

2 - The Office of Project Management (OPM) develops the Baseline Milestones Schedule.

OPM loads the Baseline Milestones with their associated planned dates into the Schedule Management System forming a Baseline Milestones Schedule.

3 - The Office of Project Management, the Associate Project Manager, and the Control Account Manager identify the Intermediate Milestones.

Based on the defined Baseline Milestones, OPM, the Associate Project Manager(s), and the Control Account Manager(s) identify the important level 3 and 4 milestones of the project.

4 - The Office of Project Management develops the Intermediate Milestone Schedule.

OPM loads the Intermediate Milestones with their associated planned dates into the Schedule Management System forming an Intermediate Milestones Schedule.

5 - The Cost Account Managers develop the Detail Milestones.
Appropriate Detail Milestones are identified by the Cost Account Managers for their Cost Accounts.

6 - The Office of Project Management develops the Detail Schedule.
With the schedule data from the Cost Account Plans, OPM develops the project's Detail Schedule. Start dates, duration, preceding activities, and succeeding activities are entered for each activity. Resources and budgets allocated to the Cost Account Plan activities are also integrated into the Detail Schedule.

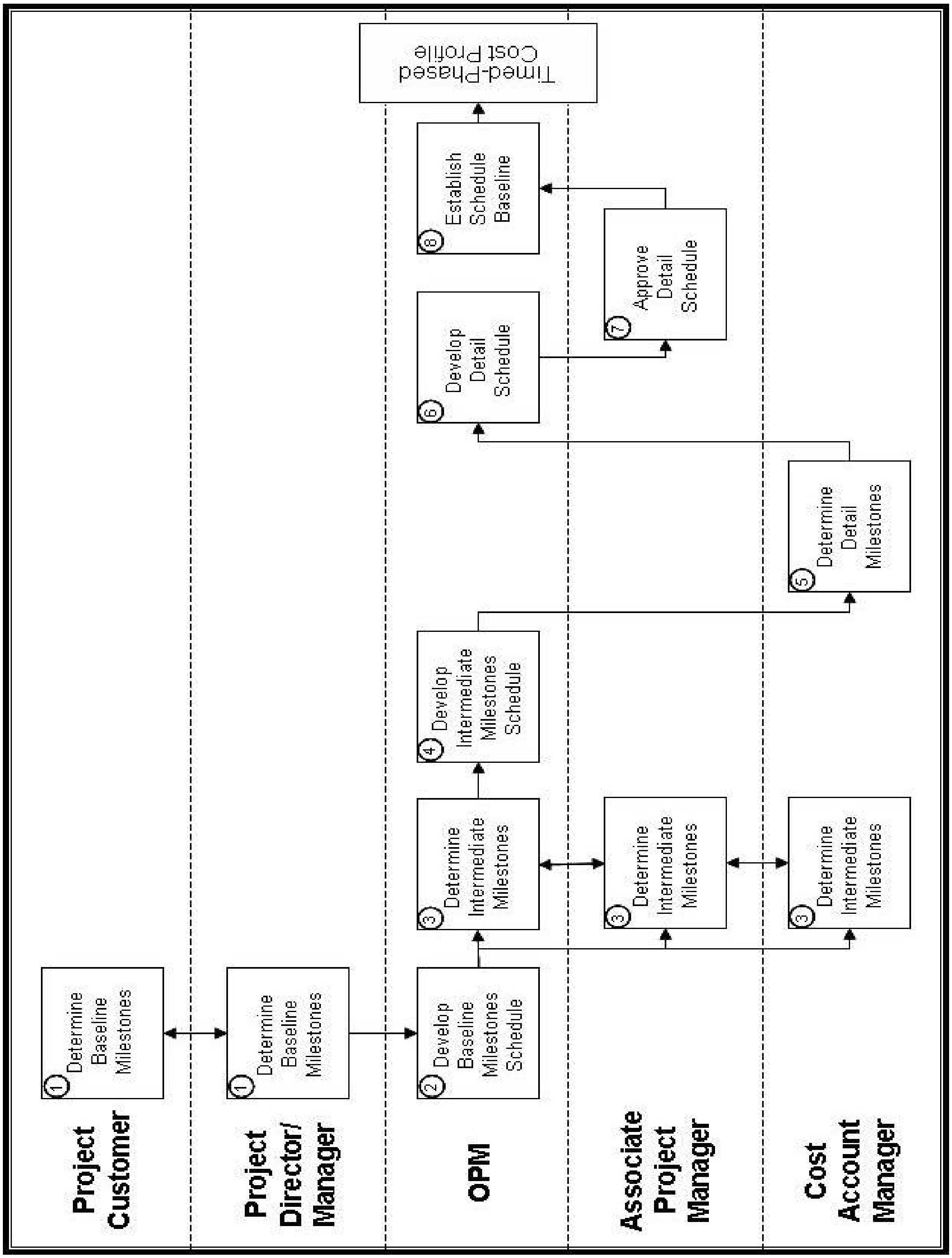
7 – The Associate Project Manager approves the Detail Schedule.
After OPM integrates the information from the Cost Account Plans into the Detail Schedule, the Associate Project Manager reviews and approves the Detail Schedule.

8 - The Office of Project Management establishes the Schedule Baseline.
After the Detail Schedule has been approved, this schedule becomes the Schedule Baseline. With the resources and budgets identified in the Cost Baseline integrated with the activity schedule in the Schedule Baseline, the project's Time-Phased Cost Profile is established. OPM also generates the Working Detail Schedule.

3.0 Process Flow Diagrams

3.1 Schedule Baseline Development Flow Diagram

3.1 Schedule Baseline Development Flow Diagram



Project Control System Procedure
PCS-02
Cost Planning

Procedure PCS-02
Cost Planning Procedure

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Procedure PCS-02
Cost Planning Procedure

1.0 General

This document defines the procedures and responsibilities for developing a project cost baseline. With funding guidance from the customer, all levels of project management are involved in the process of producing a cost estimate for the project. When combined with the project schedule, a timed-phase budget will be established against which project performance can be measured.

2.0 Procedures

The following Cost Planning procedures are graphically displayed in Diagram 3.1.

1 - The Project Customer provides funding guidance.
Based on the desired final product and the expected funding availability, the Project Customer will usually provide the Project Director an overall budget for the project.

2 - The Project Director/Manager determines an initial project funding profile.
Taking the funding guidance provided by the Project Customer, the Project Director/Manager establishes an initial funding profile for the project. With a preliminary WBS framework, proposed budgets may be prescribed as well as a fiscal year breakout.

3 - The Office of Project Management prepares the initial Cost Sheet.
For each Cost Account, the OPM prepares the Cost Sheet forms that will be used by the Cost Account Managers in developing the cost estimates for their portion of the project.

4 - The Cost Account Manager develops the Cost Sheet.
The Cost Account Manager develops a Cost Sheet for each Cost Account showing the dollars expected to be committed by fiscal year. Overhead rates and escalation factors are applied to dollar figures in the Cost Sheet from information supplied by the Chief Financial Office.

5 - The Associate Project Manager reviews the Cost Sheet.
The Associate Project Manager reviews the Cost Sheets within his area of responsibility. Sheets that are not complete are returned to the appropriate Cost Account Manager for revision. Once satisfactory, the Cost Sheet is forwarded to the Office of Project Management.

6 - The Office of Project Management enters the Cost Sheet into the Cost Book.
OPM reviews the Cost Sheet to ensure that the cost estimate as reported on the Cost Sheet does not exceed any pre-established funding constraints. The Cost Sheet is incorporated into the project Cost Book.

7 - Project Management reviews and finalizes the cost estimate.
All levels of Project Management (Project Director/Manager, Office of Project Management, Associate Project Manager, Cost Account Manager) review the consolidated cost estimate for the project, and through negotiation, finalize the estimate. The Cost Account Manager revises the Cost Sheets and Cost Account Plan for each relevant Cost Account based on the final negotiated cost estimate for the project.

8 - The Office of Project Management updates the Cost Book.
Once all cost estimates have been finalized, OPM incorporates the updated Cost Sheets into the Cost Book.

9 - The Cost Account Manager develops the Cost Account Plan.
The Cost Account Manager develops a Cost Account Plan based in the data incorporated into the Cost Sheet. The Cost Account Plan provides a detailed schedule, resource and budget plan.

10 - The Associate Project Manager reviews the Cost Account Plan.
The Associate Project Manager reviews the Cost Account Plans within his area of responsibility. Plans that are not complete are returned to the appropriate Cost Account Manager for revision. Once satisfactory, the Cost Account Plan is forwarded to the Office of Project Management.

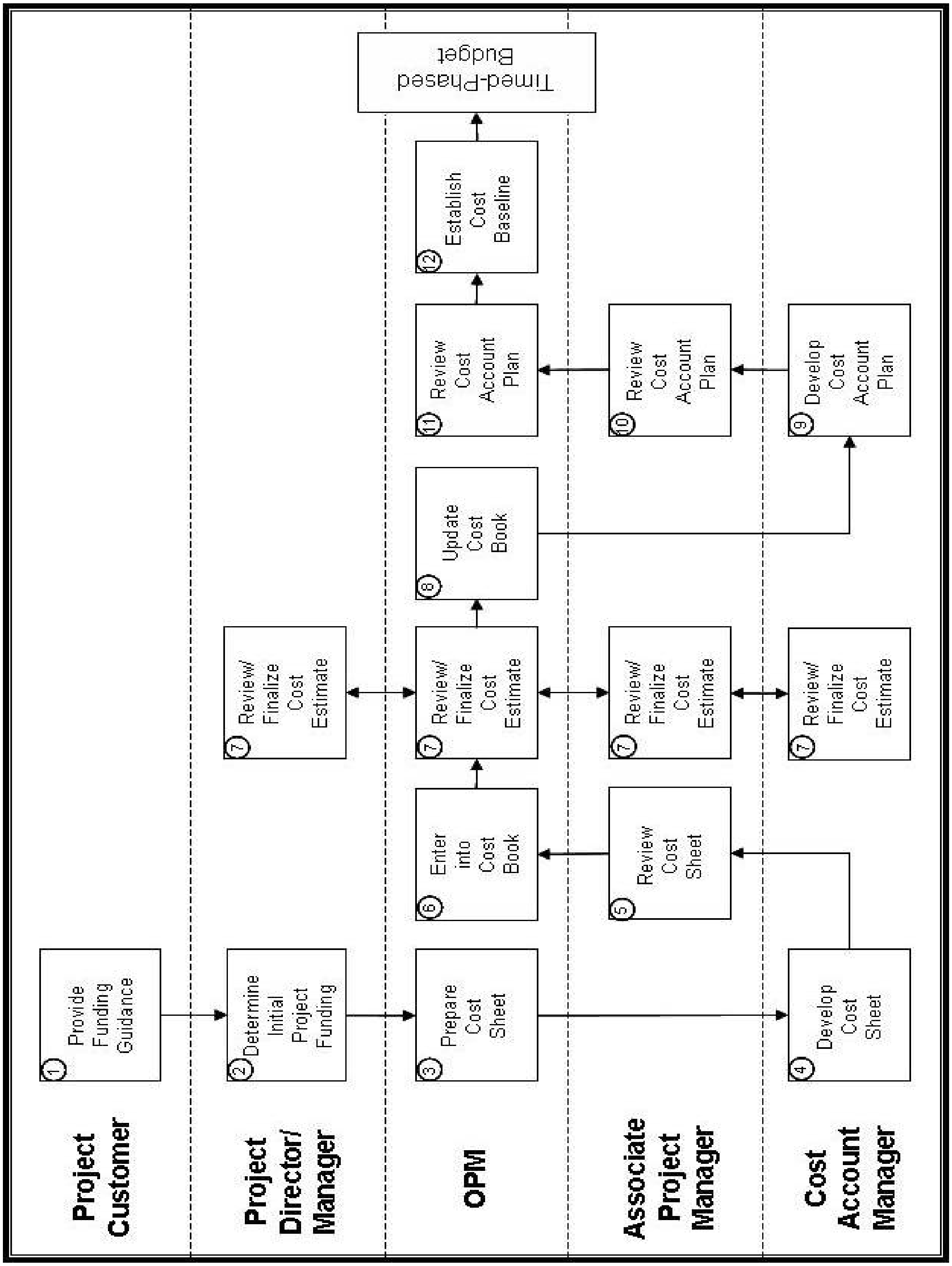
11 - The Office of Project Management reviews the Cost Account Plan.
OPM reviews the Cost Account Plan and ensures the information in the plan matches the Cost Sheet data in the Cost Book.

12 - The Office of Project Management establishes the Cost Baseline.
With an approved Cost Book, this document establishes the Cost Baseline of the project. This cost is then integrated with the Baseline Detail Schedule to produce the project's Time-Phased Budget.

3.0 Process Flow Diagrams

3.1 Cost Baseline Development Flow Diagram

3.1 Cost Baseline Development Flow Diagram



Project Control System Procedure
PCS-03
Performance Reporting

Procedure PCS-03
Performance Reporting Procedure

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Procedure PCS-03
Performance Reporting Procedure

1.0 General

This document defines the procedures and responsibilities for collecting and reporting cost and schedule performance data and analyzing these data to assess current and projected future project status. Cost and schedule performance is measured and reported for each Cost Account, WBS element, and organization element.

2.0 Procedures

The following Performance Reporting procedures are graphically displayed in Diagram 3.1.

1 - The Project Director/Manager determines the variance thresholds.
The Project Director/Manager determines the thresholds used to flag variances for each reporting element of the WBS and organization structure.

2 - The Cost Account Manager prepares the Status Update Report.
At the end of the accounting period, the Cost Account Manager reports the Cost Account work progress and accomplishments by providing input on the Status Update Report.

3 - The Associate Project Manager reviews the Status Update Report.
The Associate Project Manager verifies work package completions and makes assessment of interim progress.

4 - The Office of Project Management determines the Budgeted Cost of Work Performed.
Using the Status Update Reports, the Office of Project Management (OPM) calculates BCWP (Earned Value) by summing the budgets of work accomplished and completed portions of work in progress for each Cost Account. Progress is usually measured as Percentage Complete or Level of Effort.

5 - The performing organizations report expenses incurred.
Performing organizations charge actual costs incurred throughout the reporting period using the accounting system.

6 - The Chief Financial Office prepares the cost reports.

The Chief Financial Office converts time sheets, purchase orders, receipts and invoices, travel expense vouchers, and other entry documents into costs and commitments for each Cost Account. Labor and cost reports are prepared by the Chief Financial Office and are available to the Cost Account Managers and Associate Project Managers for review and to OPM for entering into the performance database.

7 - The Cost Account Manager reviews the cost reports.

The Cost Account Managers reviews the cost reports for accuracy and control of costs. Unusual or excessive charges are investigated and errors are reported to the Chief Financial Office.

8 - The Associate Project Manager reviews the cost reports.

Each Associate Project Manager reviews actual costs with the Cost Account Manager directing the effort.

9 - The Office of Project Management prepares the performance reports.

OPM combines ACWP (Actual Costs) data from Accounting, BCWS (Planned Value), and Budget At Completion from the Performance Measurement Baseline, BCWP (Earned Value) as determined in step 4 above, and Estimate At Completion to calculate cost, schedule, and at-completion variances. Results are published in monthly performance reports (Project Analysis Reports). Attached to the Project Analysis Report is the Red Flag Report where significant variances are flagged in accordance with the thresholds established by the Project Director/Manager.

10 - Project Management reviews the performance reports.

Each Cost Account Manager reviews the Cost Account Performance Report, notes variances, and determines reasons for above or below planned performance. Each Associate Project Manager reviews the Cost Account Performance Reports and the technical progress for their area of responsibility and discusses the work, cost, and schedule status with the responsible Cost Account Manager. The Project Director/Manager reviews the Project Analysis Report and Red Flag Report and identifies reporting elements of the WBS for which formal Variance Analysis Reports are required.

11 - The Office of Project Management issues the Variance Analysis Report form.

OPM issues a Variance Analysis Report form for each reporting element requiring a Variance Analysis Report.

12 - The Cost Account Manager completes the Variance Analysis Report.
The Cost Account Manager conducts a variance analysis to include the reasons for the variances, the anticipated effect on the project cost, schedule or technical parameters, and proposed corrective action.

13 - The Project Director/Manager interviews the Cost Account Managers and Associate Project Managers.
Project Manager interviews the Cost Account Managers and Associate Project Managers from whom Variance Analysis Reports are required. The Variance Analysis Reports are revised based on the discussion. The Variance Analysis Report form is signed by the Cost Account Manager and the Project Director/Manager.

14 - The Office of Project Management prepares the Summary Variance Analysis Report.
OPM collects the Variance Analysis Reports, confirms that requested variances have been addressed, and prepares a Summary Variance Analysis Report for the project. OPM forwards the variance package, including the revised Estimates At Completion, to the Project Director/Manager.

15 - The Project Director/Manager reviews the variance package.
The Project Director/Manager reviews the variance package consisting of the Summary Variance Analysis Report and detailed Variance Analysis Reports, including new Estimates At Completion. The Project Director/Manager may revise the Cost Accounts, including Estimates At Completion, to reflect overall knowledge of the project and responsibility and prerogative to exercise cost, schedule and technical trade-off decisions relative to the total project via the Change Control process.

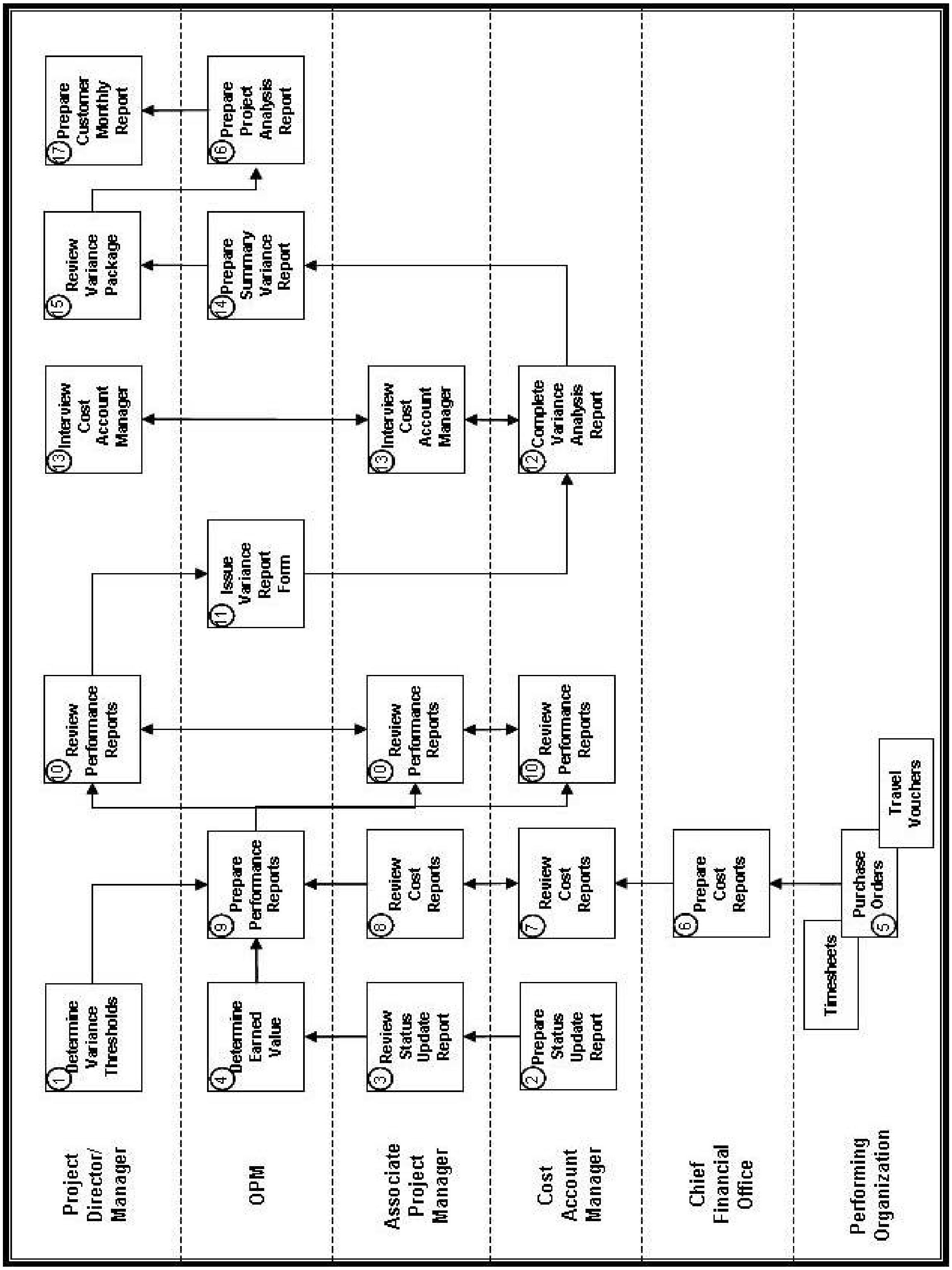
16 - The Office of Project Management prepares the revised Project Analysis Report.
OPM prepares the revised Project Analysis Report including the summary variance analysis for delivery to the Project Director/Manager.

17 - The Project Director/Manager prepares the monthly report.
The Project Director/Manager reviews the Project Analysis Report and the summary variance analysis, and prepares the monthly report to the Project Customer.

3.0 Process Flow Diagrams

3.1 Performance Reporting Flow Diagram

3.1 Performance Reporting Flow Diagram



Project Control System Procedure
PCS-04
Change Control

Procedure PCS-04
Change Control Procedure

CONTENTS

Procedure PCS-04
Change Control Procedure

1.0 General

The Project Baseline is the approved technical, schedule and cost plan for accomplishing all project activities. As the project progresses, this baseline may change due to Project Customer redirection, internal replanning, or redesign. Changes are classified according to the extent that they impact the Project Baseline. The review process and the approval authority required for a proposed change depend upon its classification. This document defines the procedures and responsibilities for requesting, reviewing, and documenting changes to the Project Baseline, and to assure timely implementation of changes once they are approved.

2.0 Procedures

The following procedures for requesting, reviewing and documenting change requests are keyed to the Change Control process flow diagrams (Section 3.0).

2.1 Request Phase (See Diagram 3.1)

Any project team member may request a change to the technical, schedule, and cost baselines by generating a Change Request form and submitting it to a member of the Change Control Board for concurrence.

1 - Originator prepares the Change Request.

The originator prepares the Change Request form in accordance with the document instructions.

2 - Change Control Board member concurs with the Change Request.

The originator must then obtain the concurrence of one member of the Change Control Board in order for the request to be accepted for consideration. The concurring member signs the Change Request in the 'Concurrence' block.

3 - Change Control Board initiates the Change Impact Assessment process.

If the Change Impact Assessment has not been completed on the Change Request form, the Change Control Board assigns actions for analyses of potential technical, schedule, and cost effects of the proposed change. Primary responsibility is typically assigned to a Cost Account Manager. The Change Control Board also reviews Change Impact Assessment submittals and may assign additional action as required. Due dates are assigned for action requests.

4 - OPM enters the Change Request in the Change Request Log.
After concurrence is obtained, OPM assigns a number (scheme: FY - sequence #, e.g., 05-001) to the Change Request and enters it in the Change Request Log as "New." OPM maintains this log as a database, updating information each time there is a change to the status of a Change Request. For Class 1-2 and Class 3 changes, OPM distributes the Change Request to members of the Change Control Board, and places the Change Request on the agenda for the next Change Control Board meeting.

5 - Cost Account Manager coordinates inputs to the Change Impact Assessment.
The assigned Cost Account Manager completes the Change Impact Assessment. The Change Impact Assessment records the potential impacts of the proposed change to the technical, schedule and cost baselines and also to safety and quality. The impacts of not approving the change are also documented. The Cost Account Manager coordinates inputs from relevant parties, such as scientists, engineers, contractors, and quality and safety personnel, to document these potential impacts. Continuation pages are attached to the Change request form where space is insufficient. Where drawings, specifications, purchase orders, Cost Sheets, Cost Account Plans, etc., are affected, changes are marked on copies and attached.

6 - Cost Account Manager drafts a change to the Cost Sheet.
The Cost Account Manager indicates Cost Sheet revisions resulting from the proposed change by marking copies of the affected Cost Sheet and attaching them to the Change Request. The Cost Sheet and other exhibits remain a part of the Change Request package during the remainder of the internal review process.

7 - Cost Account Manager establishes the classification of the Change Request.
After reviewing the Change Impact Assessment and exhibits, the Cost Account Manager establishes the Change Request classification. The Cost Account Manager selects the appropriate class and signs the appropriate block on the Change Request form.

8 - Associate Project Manager concurs with the classification of the Change Request.
The Associate Project Manager reviews the classification assigned by the Cost Account Manager and, if he concurs, signs the adjacent block.

9 - The Office of Project Management approves the classification of the Change Request.
The OPM Manager reviews the classification assigned by the Cost Account Manager and, if he concurs, signs the next block on the Change

Request form. The classification may also be reviewed and changed by the Change Control Board.

2.2 Review Phase (See Diagram 3.2)

After the Change Request has been generated, impacts have been assessed, and an approved classification level has been established, it enters the Review Phase where the proposed change is evaluated and approved by an appropriate authority. For Class 1-2 Change Requests that will go to the Project Customer, this will be an external approval process. Class 3-5 Change Requests follow an internal process.

- **External Approval**

10 - The Office of Project Management updates the Change Request Log.
Once OPM has approved the classification level, the Change Request enters the Review Phase. The status of the Change Request is updated in the Change Request Log to "Open." OPM monitors the status of Change Requests awaiting action.

11 - Change Control Board evaluates the Class 1-2 Change Request.
For Class 1-2 Change Requests, OPM distributes the Change Request to members of the Change Control Board and places the Change Request on the agenda for the next board meeting. OPM also produces the Change Request Status Report. The Change Control Board evaluates the Class 1-2 Change Request package and recommends action to the Project Director/Manager.

12 - Project Director/Manager reviews the Class 1-2 Change Request.
The Project Director/Manager reviews the Class 1-2 Change Request package and Change Control Board recommendations. The Project Director/Manager prepares a submission to the Project Customer in accordance with customer procedures which may include a Baseline Change Control Board. This may include the Change Request as received, with some or all of the exhibits, or it may be a letter extracted from the Change Request material with additional amplification where necessary.

13 - Project Customer approves/disapproves the Class 1-2 Change Request.
For Class 1-2 Change Requests, the Project Customer is the final approving authority. Approval is indicated by signature in the appropriate 'Final Approval' block on the Change Request form. The approved Class 1-2 Change Request package is then returned to the Project Director/Manager.

14 - Project Director/Manager reviews the Project Customer Change Request actions.
The Project Director/Manager reviews the decisions of the Project Customer and documents any impacts to the project plans in the Recommendation and Disposition section of the Change Request.

15 - The Office of Project Management determines the approval status of the Change Request.
OPM updates the Change Request Log after the review process has been completed. At this stage, the Change Request can be deferred, approved, disapproved or determined to be a duplicate of a previously submitted Change Request. Any disapproved CR is sent back to the affected CAM who will consult with the originator to determine any further action.

- **Internal Approval**

10 - The Office of Project Management updates the Change Request Log.
Once OPM has approved the classification level, the Change Request enters the Review Phase. The status of the Change Request is updated in the Change Request Log to "Open." OPM monitors the status of Change Requests awaiting action.

11 - Change Control Board evaluates the Class 3 Change Request.
For Class 3 Change Requests, OPM distributes the Change Request to members of the Change Control Board and places the Change Request on the agenda for the next board meeting. OPM also produces the Change Request Status Report. The Change Control Board evaluates the Class 3 Change Request package and recommends action to the Project Director/Manager.

12 - Project Director/Manager reviews the Class 3 Change Request.
The Project Director/Manager reviews the Class 3 Change Request package and Change Control Board recommendations.

13 - Project Director/Manager approves/disapproves the Class 3 Change Requests.
For Class 3 Change Requests, the Project Director/Manager is the final approving authority. Approval is indicated by signature in the appropriate 'Final Approval' block on the Change Request form. The approved Class 3 Change Request package is forwarded to OPM.

14 - Associate Project Manager evaluates the Class 4 Change Request.
The Associate Project Manager evaluates Class 4 Change Requests.

15 - Associate Project Manager approves/disapproves the Class 4 Change Request.

For Class 4 Change Requests, the Associate Project Manager is the final approving authority. Approval is indicated by signature in the appropriate 'Final Approval' block on the Change Request form. The approved Class 4 Change Request package is forwarded to OPM.

16 - Cost Account Manager evaluates the Class 5 Change Request.

The Cost Account Manager evaluates Class 5 Change Requests.

17 - Cost Account Manager approves/disapproves the Class 5 Change Request.

For Class 5 Change Requests, the Cost Account Manager is the final approving authority. Approval is indicated by signature in the appropriate 'Final Approval' block on the Change Request form. The approved Class 5 Change Request package is forwarded to OPM.

18 - OPM determines the approval status of the Change Request.

OPM updates the Change Request Log after the review process has been completed. At this stage, the Change Request can be deferred, approved, disapproved or determined to be a duplicate of a previously submitted Change Request. Any disapproved CR is sent back to the affected CAM who will consult with the originator to determine any further action.

2.3 Documentation Phase (See Diagram 3.3)

After the Change Request has been reviewed and approved by the appropriate authority, it enters the Documentation Phase where the proposed change is fully documented and implemented.

19 - The Office of Project Management issues the Change Order.

OPM issues a Change Order for the approved Change Request. The Change Order is a completed, approved Change Request.

20 - Associate Project Manager updates the technical documentation.

Upon receipt of a Change Order, the affected Associate Project Manager ensures the appropriate technical documentation (drawings, specifications, etc.) is revised.

21 - The Office of Project Management updates the Cost Sheet.

OPM updates the Cost Sheet in the project’s Cost Book.

22 - Cost Account Manager revises the Cost Account Plan.

The Cost Account Manager revises the Cost Account Plan based on the approved Change Order.

23 - Associate Project Manager reviews the revised Cost Account Plan.
The affected Associate Project Manager reviews the revised Cost Account Plan for compliance with the approved change to scope, cost and schedule plans, and approves or disapproves. Approved Cost Account Plans are forwarded to Project Services.

24 - The Office of Project Management updates the Working Detail Schedule.
Using the approved Cost Account Plan, OPM updates the Working Detail Schedule. [Note: Changes to the Performance Measurement Baseline may be consolidated and reserved for an annual (or as determined by the Project Director/Manager) project rebaselining.]

25 - Cost Account Manager implements the approved Cost Account Plan.
The Cost Account Manager performs the effort in accordance with the approved Cost Account Plan.

3.0 Process Flow Diagrams

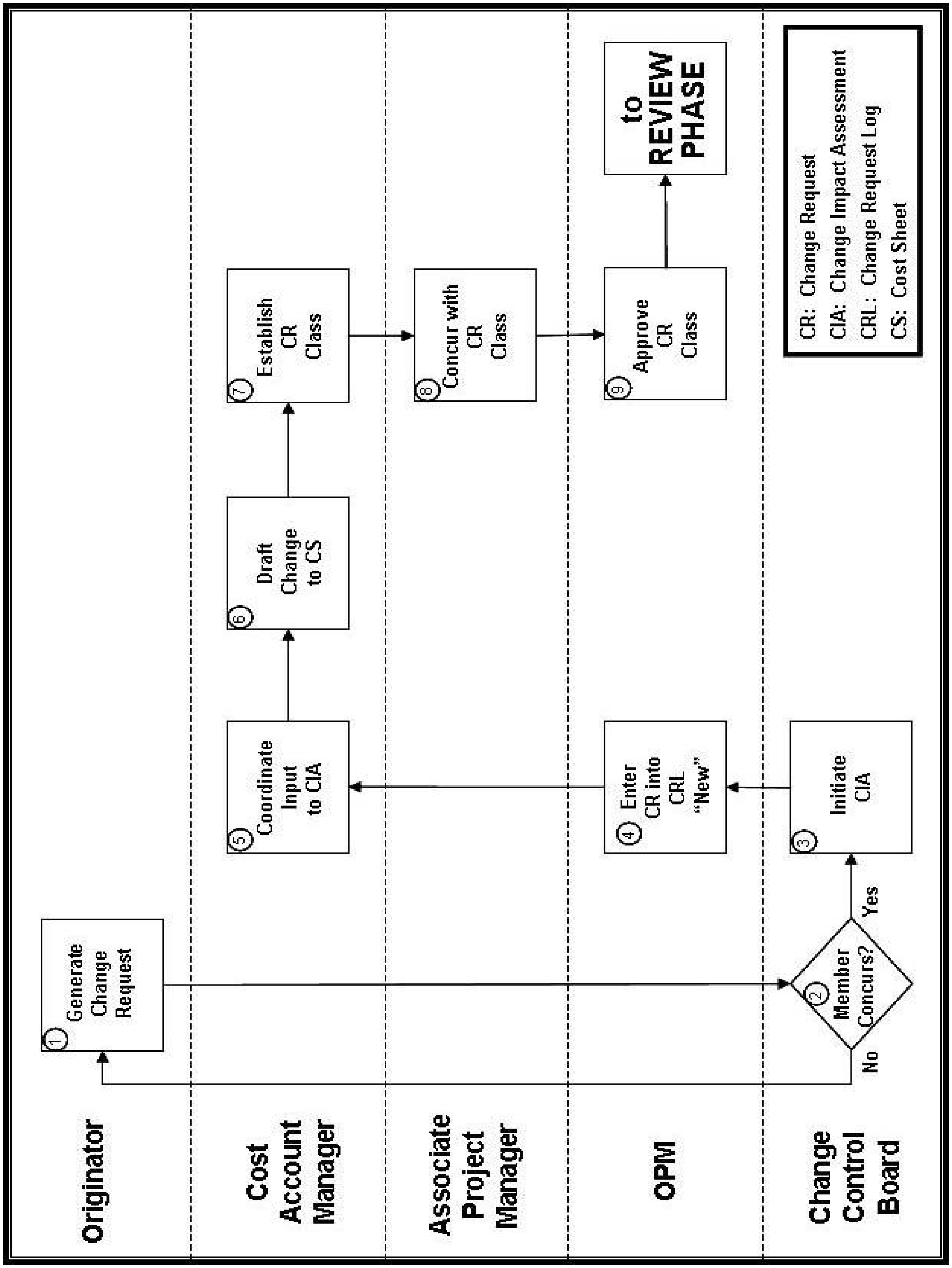
3.1 Request Phase Flow Diagram

3.2 Review Phase Flow Diagrams

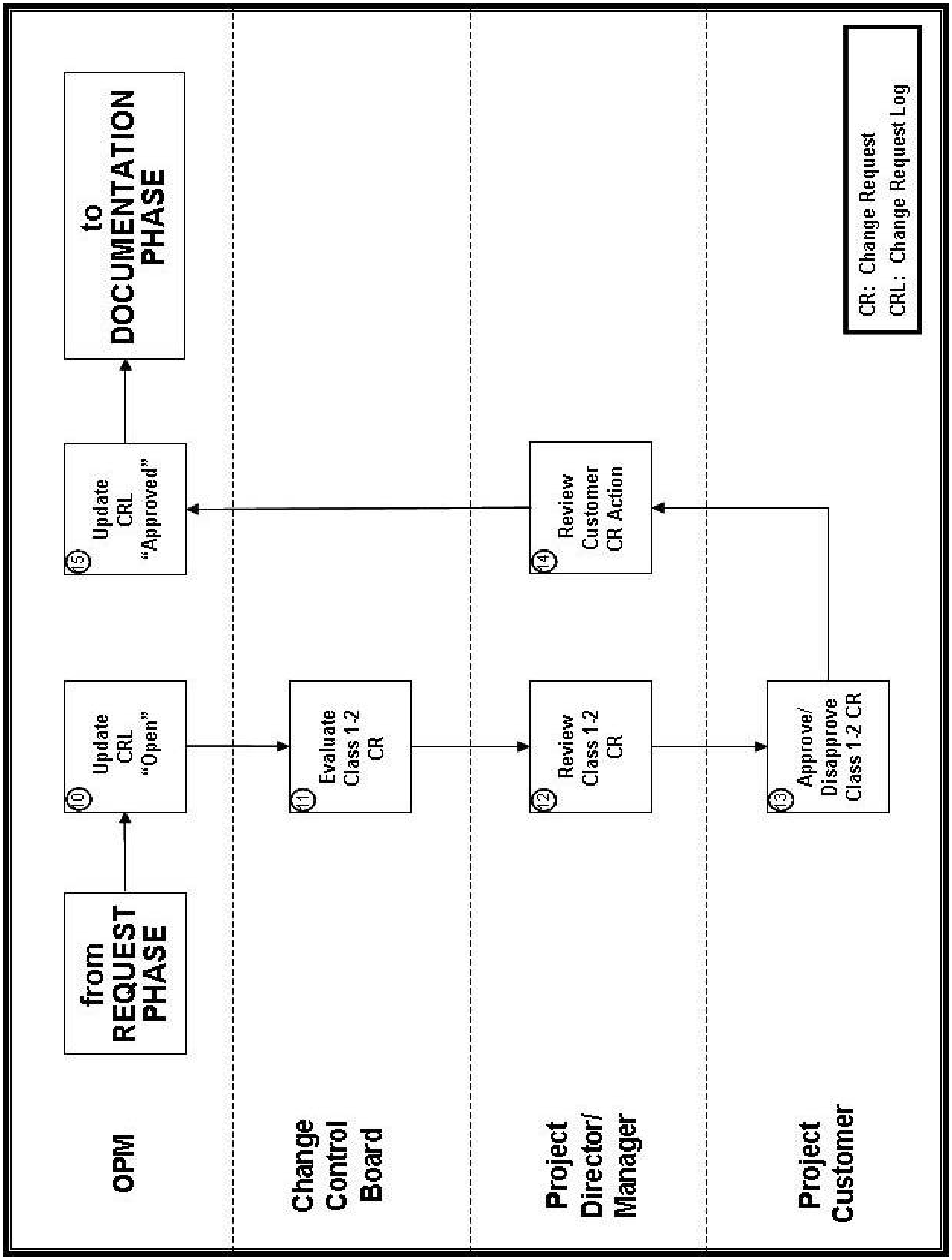
- **External Approval**
- **Internal Approval**

3.3 Documentation Phase Flow Diagram

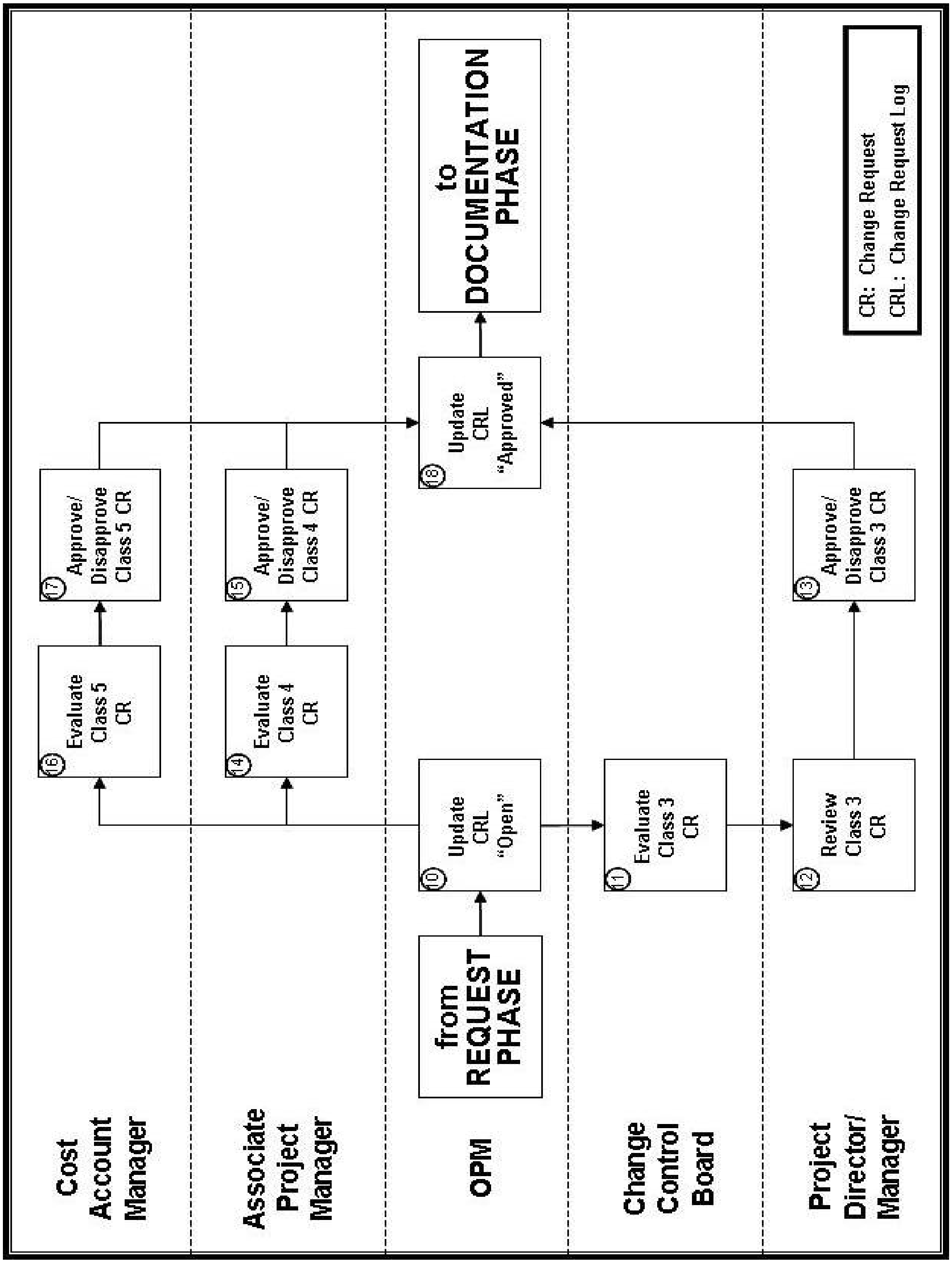
3.1 Request Phase Flow Diagram



3.2 Review Phase Flow Diagram (External Approval)



3.2 Review Phase Flow Diagram (Internal Approval)



3.3 Documentation Phase Flow Diagram